

# RT<sup>2</sup> Profiler PCR Array (Rotor-Gene® Format)

## Dog Cell Death PathwayFinder

Cat. no. 330231 PAFD-212ZR

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format R	Rotor-Gene Q, other Rotor-Gene cyclers

### Description

The Dog Cell Death PathwayFinder RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes important for the central mechanisms of cellular death: apoptosis, autophagy, and necrosis. Apoptosis, or programmed cell death, results in controlled cell shrinkage and fragmentation via the action of caspases, as well as an anti-inflammatory cytokine release. In contrast, necrosis signals via RIPK1 (RIP1), leading to cell swelling, lysis, and a pro-inflammatory cytokine release. Autophagy destroys the cell's damaged proteins and organelles via an intracellular catabolic process in the lysosome. Multiple cellular processes require the removal of specific cells by a controlled cell-death program. For example, tissue remodeling activates apoptosis, whereas energy metabolism and growth regulation responses rely on autophagy. Developmental processes often activate apoptosis, while bodily injuries or infection more commonly induce necrosis. The molecular mechanisms behind these cell death pathways overlap and more than one form of cell death occur simultaneously during some cellular functions. Apoptosis and necrosis both signal through the death domain receptors FAS, TNFRSF1A (TNFR1), and TNFRSF10A (TRAIL-R), while autophagy and apoptosis share BCL2 family members as key players. The results of this array can yield insights into which central cell death mechanism(s) drive normal biological or pathophysiological processes. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in cellular death pathways with this array.

For further details, consult the *RT<sup>2</sup> Profiler PCR Array Handbook*.



## Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in the Rotor-Gene format are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products.

For long term storage, keep plates at –20°C.

**Note:** Ensure that you have the correct RT<sup>2</sup> Profiler PCR Array format for your real-time cyclers (see table above).

**Note:** Open the package and store the products appropriately immediately on receipt.

## Array layout

The 96 real-time assays in the Rotor-Gene format are located in wells 1–96 of the Rotor-Disc™ (plate A1–A12=Rotor-Disc 1–12, plate B1–B12=Rotor-Disc 13–24, etc.). To maintain data analysis compatibility, wells 97–100 do not contain real-time assays but will contain master mix to account for weight balance.

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## Gene table: RT<sup>2</sup> Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
1	N/A	XM_548413	ABL1	C-abl oncogene 1, non-receptor tyrosine kinase
2	N/A	XM_005623876	AKT1	V-akt murine thymoma viral oncogene homolog 1
3	N/A	XM_003432034	APAF1	Apoptotic peptidase activating factor 1
4	Cfa.24091	NM_001006601	APP	Amyloid beta (A4) precursor protein
5	N/A	XM_531866	ATG12	ATG12 autophagy related 12 homolog ( <i>S. cerevisiae</i> )
6	N/A	XM_005635866	ATG16L1	ATG16 autophagy related 16-like 1 ( <i>S. cerevisiae</i> )
7	N/A	XM_535740	ATG3	ATG3 autophagy related 3 homolog ( <i>S. cerevisiae</i> )
8	N/A	XM_005627675	ATG5	ATG5 autophagy related 5 homolog ( <i>S. cerevisiae</i> )
9	N/A	XM_005632152	ATG7	ATG7 autophagy related 7 homolog ( <i>S. cerevisiae</i> )
10	Cfa.10969	NM_001014376	ATP6V1G2	ATPase, H <sup>+</sup> transporting, lysosomal 13kDa, V1 subunit G2
11	Cfa.22	NM_001003011	BAX	BCL2-associated X protein
12	Cfa.110	NM_001002949	BCL2	B-cell CLL/lymphoma 2
13	N/A	XM_545888	BCL2A1	BCL2-related protein A1
14	Cfa.3481	NM_001003072	BCL2L1	BCL2-like 1
15	N/A	XR_001318022	BCL2L11	Bcl-2-like protein 11-like
16	N/A	XM_005624442	BECN1	Similar to Beclin 1 (Coiled-coil myosin-like BCL2-interacting protein) (Protein GT197)
17	Cfa.828	NM_001048023	BIRC2	Baculoviral IAP repeat containing 2
18	Cfa.18376	NM_001080725	BIRC3	Baculoviral IAP repeat containing 3
19	N/A	XM_843970	BMF	Bcl2 modifying factor
20	N/A	XM_843405	C5H1orf159	Hypothetical protein LOC606926
21	Cfa.12400	NM_001195151	CASP2	Caspase 2, apoptosis-related cysteine peptidase
22	Cfa.84	NM_001003042	CASP3	Caspase 3, apoptosis-related cysteine peptidase
23	Cfa.3589	NM_001003125	CASP4	Caspase 4, apoptosis-related cysteine peptidase
24	N/A	XM_545022	CASP6	Caspase 6, apoptosis-related cysteine peptidase
25	N/A	XM_005637738	CASP7	Caspase 7, apoptosis-related cysteine peptidase
26	Cfa.20874	NM_001031633	CASP9	Caspase 9, apoptosis-related cysteine peptidase
27	N/A	XM_548057	CCDC103	Coiled-coil domain containing 103
28	Cfa.180	NM_001002982	CD40	CD40 molecule, TNF receptor superfamily member 5
29	Cfa.179	NM_001002981	CD40LG	CD40 ligand
30	N/A	XM_545592	CFLAR	CASP8 and FADD-like apoptosis regulator
31	N/A	XM_848234	COMM4	COMM domain containing 4
32	N/A	XM_543203	CTSB	Cathepsin B
33	Cfa.1661	NM_001002938	CTSS	Cathepsin S
34	Cfa.40704	NM_001100291	CYBB	Cytochrome b-245, beta polypeptide (chronic granulomatous disease)
35	N/A	XM_849343	CYLD	Cylindromatosis (turban tumor syndrome)
36	Cfa.47269	NM_001113713	DEFB1	Defensin, beta 1
37	N/A	XM_003433926	DENN4A	DENN/MADD domain containing 4A
38	N/A	XM_544574	DFFA	DNA fragmentation factor, 45kDa, alpha polypeptide

Position	UniGene	GenBank	Symbol	Description
39	N/A	XM_548709	DPYSL4	Dihydropyrimidinase-like 4
40	N/A	XM_005626021	EIF5B	Eukaryotic translation initiation factor 5B
41	Cfa.3504	NM_001286958	ESR1	Estrogen receptor 1
42	N/A	XM_005636650	FAS	Fas cell surface death receptor
43	Cfa.4547	NM_001287153	FASLG	Fas ligand (TNF superfamily, member 6)
44	N/A	XM_546245	FOXI1	Forkhead box I1
45	N/A	XM_005624022	GAA	Glucosidase, alpha; acid
46	N/A	XM_003639101	GADD45A	Growth arrest and DNA damage-inducible protein GADD45 alpha-like
47	N/A	XM_545481	GALNT5	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 5 (GalNAc-T5)
48	N/A	XM_540431	GRB2	Growth factor receptor-bound protein 2
49	N/A	XM_535763	HSPBAP1	HSPB (heat shock 27kDa) associated protein 1
50	N/A	XM_536221	HTT	Huntingtin
51	Cfa.3900	NM_001003174	IFNG	Interferon gamma
52	Cfa.3888	NM_001313855	IGF1	Insulin-like growth factor 1 (somatomedin C)
53	Cfa.3911	XM_545828	IGF1R	Insulin-like growth factor 1 receptor
54	Cfa.18796	NM_001130093	INS	Insulin
55	N/A	XM_546789	JPH3	Junctophilin 3
56	N/A	XM_546243	KCNI1	Kv channel interacting protein 1
57	N/A	XM_022425067	LOC481473	Immunity-related GTPase family M protein
58	N/A	XM_848694	MAG	Myelin associated glycoprotein
59	N/A	XM_005634951	MAP1LC3A	Microtubule-associated protein 1 light chain 3 alpha
60	N/A	XM_534943	MAPK8	Mitogen-activated protein kinase 8
61	Cfa.34	NM_001003016	MCL1	Myeloid cell leukemia sequence 1 (BCL2-related)
62	Cfa.10766	NM_001003344	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1
63	Cfa.25663	XM_848890	NOL3	Nucleolar protein 3 (apoptosis repressor with CARD domain)
64	N/A	XM_547506	PARP1	Poly (ADP-ribose) polymerase 1
65	N/A	XM_532616	PARP2	Poly (ADP-ribose) polymerase 2
66	N/A	NM_001287160	PIK3C3	Phosphoinositide-3-kinase, class 3
67	Cfa.3695	NM_001003192	PTEN	Phosphatase and tensin homolog
68	N/A	XM_005616467	PVR	Poliovirus receptor
69	N/A	NM_001313865	RAB25	RAB25, member RAS oncogene family
70	N/A	XM_005624752	RPS6KB1	Ribosomal protein S6 kinase, 70kDa, polypeptide 1
71	N/A	XM_005639186	SNCA	Synuclein, alpha (non A4 component of amyloid precursor)
72	N/A	XM_543047	SPATA2	Spermatogenesis associated 2
73	N/A	XM_014117639	SQSTM1	Sequestosome 1
74	N/A	XM_014107144	SYCP2	Synaptonemal complex protein 2
75	Cfa.54	NM_001003244	TNF	Tumor necrosis factor
76	N/A	XM_539146	TNFRSF11B	Tumor necrosis factor receptor superfamily, member 11b
77	Cfa.3498	XM_849381	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
78	N/A	XM_546720	TNFRSF4	Tumor necrosis factor receptor superfamily, member 4

Position	UniGene	GenBank	Symbol	Description
79	N/A	XM_005617983	TNFRSF8	Tumor necrosis factor receptor superfamily, member 8
80	Cfa.3658	NM_001003210	TP53	Tumor protein p53
81	N/A	XM_005625072	TRAF2	TNF receptor-associated factor 2
82	N/A	XM_848314	TXNL4B	Thioredoxin-like 4B
83	N/A	XM_005636080	ULK1	Unc-51-like kinase 1 (C. elegans)
84	Cfa.4543	XM_538165	XIAP	X-linked inhibitor of apoptosis
85	Cfa.17735	NM_001195845	ACTB	Actin, beta
86	N/A	XM_535458	B2M	Beta-2-microglobulin
87	Cfa.36213	NM_001003142	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
88	Cfa.4551	NM_001003357	HPRT1	Hypoxanthine phosphoribosyltransferase 1
89	N/A	XM_014109387	RPLP1	Ribosomal protein, large, P1
90	N/A	SA_00130	FGDC	Dog Genomic DNA Contamination
91	N/A	SA_00104	RTC	Reverse Transcription Control
92	N/A	SA_00104	RTC	Reverse Transcription Control
93	N/A	SA_00104	RTC	Reverse Transcription Control
94	N/A	SA_00103	PPC	Positive PCR Control
95	N/A	SA_00103	PPC	Positive PCR Control
96	N/A	SA_00103	PPC	Positive PCR Control

## Related products

For optimal performance, RT<sup>2</sup> Profiler PCR Arrays should be used together with the RT<sup>2</sup> First Strand Kit for cDNA synthesis and RT<sup>2</sup> SYBR<sup>®</sup> Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT <sup>2</sup> First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT <sup>2</sup> SYBR Green ROX <sup>™</sup> FAST Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the Rotor-Gene Q and other Rotor-Gene cyclers	330620

\* Larger kit sizes available; please inquire.

RT<sup>2</sup> Profiler PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at [www.qiagen.com](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

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